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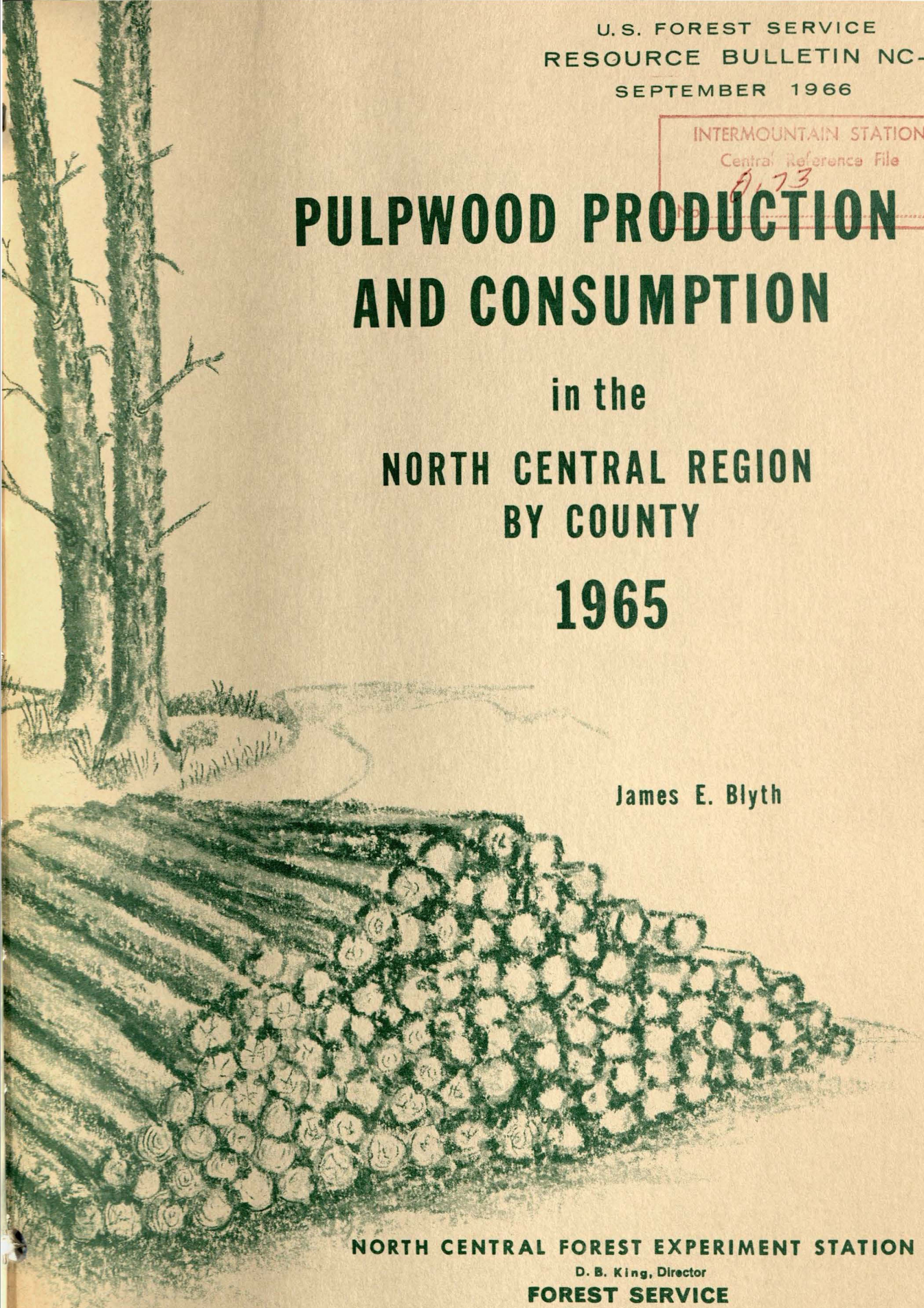
PULPWOOD PRODUCTION AND CONSUMPTION

in the

NORTH CENTRAL REGION BY COUNTY

1965



James E. Blyth

NORTH CENTRAL FOREST EXPERIMENT STATION
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FOREST SERVICE
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Pulpwood Production and Consumption in the North Central Region by County, 1965

James E. Blyth

The Lake States Forest Experiment Station and part of the Central States Forest Experiment Station were recently combined to form the North Central Forest Experiment Station. Consequently, this seventh annual report of the pulpwood harvest in Lake States counties also includes data on the pulpwood harvest in Illinois, Indiana, Iowa, and Missouri. These four states are called the "Central States" in this report.

The volume of timber removed from North Central States forests (Lake States and Central States) varies from year to year. Frequent measurement is required to maintain a current and meaningful picture of the relationships between timber cut, timber growth, and desirable cut. To partially meet this need the Station publishes summaries of the output of various timber products as often as data can be accumulated.

The pulpmills using North Central States timber in 1964 furnished figures showing their pulpwood receipts by State and county. Their cooperation is gratefully acknowledged. Thanks are due also to Ray Pfeifer, Forest Survey Coordinator, Michigan Department of Conservation, for collecting data for the Michigan pulpmills. Robert Knutson, North Central Forest Experiment Station, programmed the computing of the pulpmill data.

PART I. IN THE LAKE STATES

1965 PULPWOOD BRIEFS

Lake States Production Stabilizes at a High Level

In 1965, the Lake States pulpwood production[1] was 3,636,000 cords, a minor increase of 8,000 cords from 1964 and only 26,000 cords less than the record production of 1963. Ninety-six percent was roundwood; the remainder was residue from local wood-using plants. Most of the residue was delivered to pulpmills as chips.

For the first time since 1958 the cut of maples, oaks, and other dense hardwoods as a group declined; the decrease from 1964 was about 6 percent. The harvest of birch, balsam fir, and spruce decreased 29, 15, and 8 percent respectively. On the other hand, hemlock, pine, and aspen production increased. Fifty-one percent of the roundwood harvest was aspen.

The percentage of peeled and rough aspen produced in the Lake States varied widely between States and Forest Survey districts (fig. 1). Rough (i.e., delivered with bark to the mills) and peeled volumes in Minnesota and Michigan were about evenly divided, but, in Wisconsin, more than two-thirds was peeled. Most districts produced more peeled aspen than rough, but in the Rainy River District of Minnesota and in northern Lower Michigan, more than four-fifths of the harvest was rough aspen. The type of production in each district varies with the requirements of the mills to be supplied. For species other than aspen, about 90 percent or more of the harvest in all States was rough wood.

Lake States Mills Again Consume More Than 4 Million Cords

Forty-eight Lake States mills used 4,027,000 cords of pulpwood in 1965, only slightly less than the record consumption of 4,092,000 cords in 1963. The most used species, in order of volume, were aspen, pine, and spruce. Together, these species represented 75 percent of all pulpwood consumed.

Note: Mr. Blyth is a Market Analyst at the North Central Forest Experiment Station, which is maintained in St. Paul, Minn., by the Forest Service, U. S. Department of Agriculture, in cooperation with the University of Minnesota.

[1] *"Production" is "the harvest of pulpwood from timber lands whereas "consumption" (discussed in later sections) is "the utilization of pulpwood by mills".*

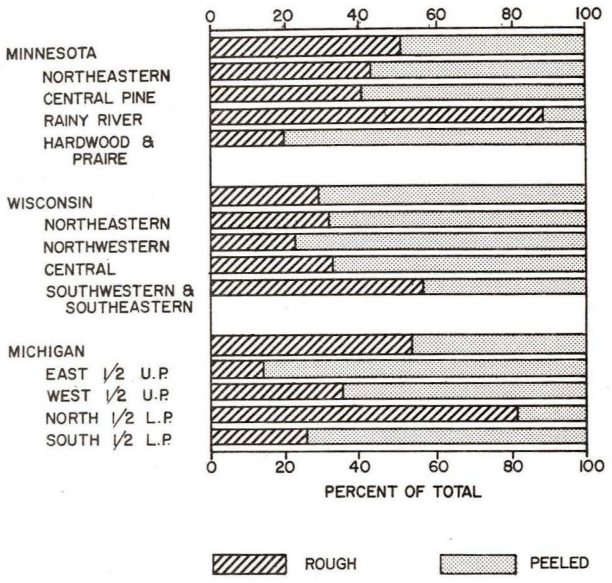


FIGURE 1. — Percent of peeled and rough aspen production of roundwood, by State and Forest Survey District, 1965.

Consumption of aspen and pine increased by 59,000 and 58,000 cords, respectively, above 1964. Significant declines in consumption occurred in balsam fir, miscellaneous hardwoods, spruce, and birch. Use of birch, never a species in great demand, declined almost one-third. Total residue use was up 12,000 cords, although less softwood residue was used.

Region Becoming Less Dependent on Imports

Imports from Canada have dropped from a high of 842,000 cords in 1951 to 297,000 cords in 1965, while imports from other States have increased from a low of 24,000 cords in 1947 to 136,000 cords in 1965. Overall, during the last 20 years, Lake States mills have become less dependent on pulpwood imports from other areas. Nevertheless, the region still obtains 11 percent of its pulpwood from Canada and other States.

Pulpwood exports from Lake States forests to five Central States[2] plants and three Canadian plants in 1965 were about 32,000 cords of spruce, balsam, and miscellaneous hardwoods and 11,000 cords of wood chips and other residues.

The only net export was mixed hardwoods (table 1). Three-fourths of the net imports were composed of spruce and pine.

Lake States mills could probably obtain all of their pulpwood within the region, but for several reasons they import some pulpwood: First, there are occasional price advantages. Secondly, several Lake States mills have connections with Canadian mills and forest properties; the flow of wood from forest land in one area to mills in other regions is normal when the land and mills are in common ownership. Also, good procurement strategy may dictate buying wood from other regions as a hedge against future wood shortages or high wood costs locally. Amicable business relationships built up through pulpwood buying in other regions will be advantageous to the mills involved if they suddenly need larger volumes of imported wood.

[2] *Central States are Indiana, Illinois, Iowa and Missouri.*

TABLE 1. — *Pulpwood exports and imports for the Lake States, 1965*
(Thousand standards cords, unpeeled)

Species	Exports	Imports	Net exports or (imports)
Aspen	-	18	(18)
Balsam fir	1	13	(12)
Pine	-	116	(116)
Spruce	19	210	(191)
Mixed hardwoods	12	*	12
Residues, softwood	6	77	(71)
Residues, hardwood	5	9	(4)
Total	43	443	(400)

* Less than 500 cords.

Review of Pulpwood Production by States, 1965

Of the 1965 harvest, Michigan produced 38 percent, Wisconsin 34 percent, and Minnesota 28 percent.

Forty-eight Lake States plants used the various pulping species in 1965 (table 2). Figures 2 and 3 show the amount of roundwood cut relative to commercial forest area by county and relative to merchantable timber volume by Forest Survey District.

Michigan pulpwood harvest doubles since 1947 — For the fourth consecutive year the Michigan harvest increased. In 1965, Michigan produced 1,365,000 cords of pulpwood — a gain of 3 percent over 1964 and double the volume produced in

TABLE 2. — *Number of plants using the different species of wood for pulping in 1965*

Species and kind of material	Lake States	Minn.	Wis.	Mich.
Aspen	40	7	25	8
Balsam fir	25	7	14	4
Birch	7	1	4	2
Hemlock	8	-	6	2
Pine	12	4	5	3
Spruce	27	5	17	5
Tamarack	5	1	4	-
Misc. hardwoods	14	2	8	4
Wood chips	8	1	4	3
Slabwood and other residue	3	-	3	-
Total plants	48	9	29	10

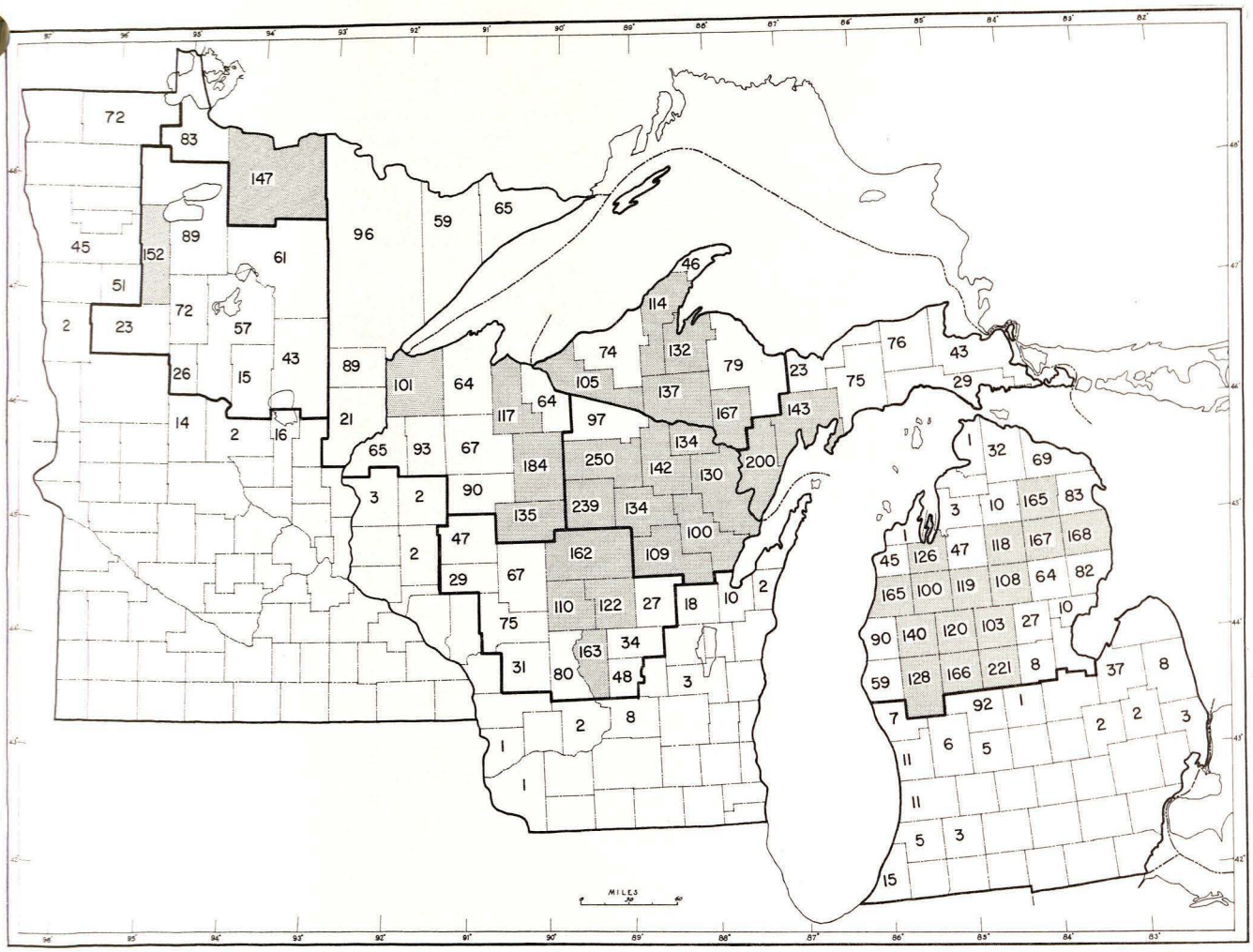


FIGURE 2. — Cords of pulpwood cut per 1,000 acres of stocked commercial forest land in the principal pulpwood-producing counties, 1965. Cross-hatching shows counties that supplied 100 or more cords of pulpwood per 1,000 acres of stocked commercial forest land. The heavy lines delineate the boundaries of the Forest Survey Districts in each State.

1947. Resident mills used 55 percent of the Michigan harvest; Wisconsin received the remainder except for 7,000 cords shipped out of the region. All of the Michigan wood shipped to Wisconsin came from the Upper Peninsula. The major species cut were aspen, pine, miscellaneous hardwoods, and spruce, representing 49, 17, 11, and 9 percent respectively of the Michigan total.

Pulpwood was cut in 62 Michigan counties. The largest cuts were in Menominee (91,000 cords), Delta (82,000 cords), and Iron (79,000 cords) Counties. The largest production gains (8 percent) were in eastern Upper Michigan. Menominee County made the largest cut of aspen, Marquette County the largest cut of pine, and Manistee County the largest cut of miscellaneous hardwoods. In western Upper Michigan, only one county produced less than 40,000 cords; most of the district volume was shipped to Wisconsin. A sharp increase from 1964 in use of residues from southern Lower Michigan more than offset a decrease in residues used from western Upper Michigan.

The Wisconsin harvest changes little. — Wisconsin's 1965 pulpwood harvest inched above 1964 by less than 1 percent to 1,253,000 cords but was 154 percent above the 1947 harvest. Wisconsin mills used 98 percent of this total. Pulpwood output increased by 40,000 cords over 1964 in the Northeastern District. Production was only 35,000 cords in southern Wisconsin but was 67 percent higher than in 1964. Although Wisconsin mills depend less than previously on imports, they still

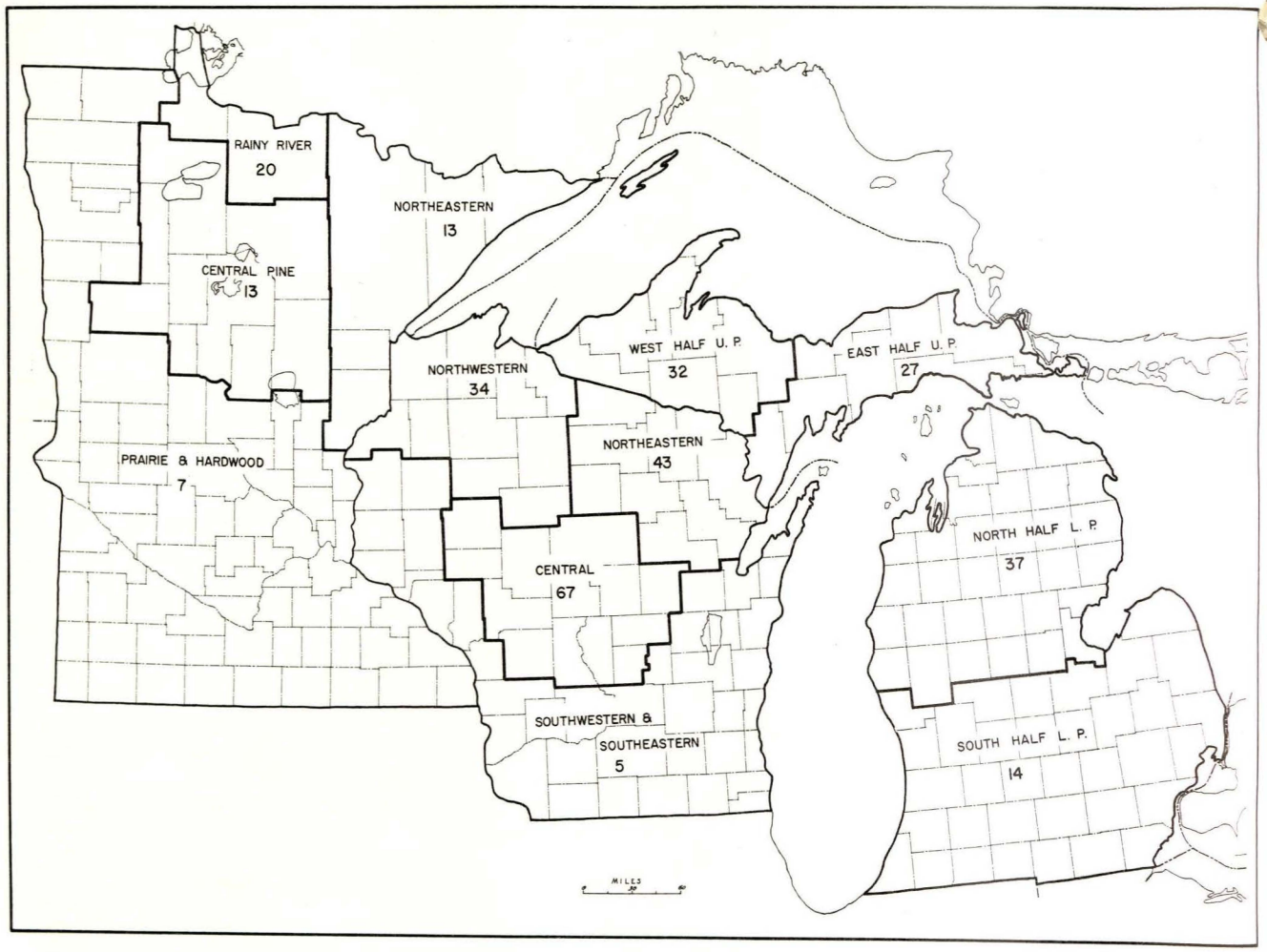


FIGURE 3. — Cords of pulpwood bolts and logs harvested per thousand cords of merchantable volume in principal pulpwood species, by Forest Survey District, 1965.

imported 45 percent of their pulpwood requirements in 1965.

Nearly 50 counties contributed to the 1965 pulpwood harvest. Lincoln County recorded a 22,000-cord gain in output over 1964, but the Price County output decreased 20,000 cords. Top-producing counties were Oneida (120,000 cords), Price (88,000 cords), and Lincoln (77,000 cords). Oneida County harvested the most aspen, Douglas and Washburn Counties the most pine, and Marathon County the most miscellaneous hardwoods. Southwestern counties contributed nearly four times as many cords of residue for pulping as in 1964.

The Minnesota harvest down slightly. — Minnesota's pulpwood production in 1965 equalled the last 5-year average of 1,018,000 cords but was down slightly from 1964. Minnesota now retains 10 percent more of its output than in 1961. Most of this 10 percent had previously been exported to Wisconsin. Exports from northeastern Minnesota to Wisconsin decreased by 39,000 cords from 1964, and the total cut in this district fell by 43,000 cords. Production was stable in the other districts. Of the major pulping species, only aspen recorded a gain.

The pulpwood was cut in 24 Minnesota counties. The major contributors were St. Louis (277,000 cords), second largest pulpwood-producing county east of the Rocky Mountains, Koochiching (205,000 cords), and Itasca (80,000 cords). A sharp production decrease occurred in Lake County primarily because several Wisconsin mills procured less wood there. Aspen and pine cuttings were largest in St. Louis County. Koochiching County supplied the most spruce.

THE SPRUCE PULPWOOD STORY

Spruce has always been one of the most valuable pulpwood resources in the Lake States. The long fiber characteristic of spruce has made it a much desired pulpwood for manufacturing high-quality papers for writing, magazines, and books. The premium prices paid recently in the Lake States for spruce pulpwood stumpage reflect its value to the region.

Currently, spruce ranks fourth in pulpwood production in the Lake States, behind aspen, jack pine, and miscellaneous hardwoods. Spruce production has been erratic from year to year in the region but has averaged 376,000 cords annually from 1946 to 1965. The production averages for 5-year intervals beginning in 1946 have been as follows:

	Thousand cords
1946-50	375
1951-55	395
1956-60	394
1961-65	341

Of the three Lake States, Minnesota has always been the volume leader of spruce pulpwood harvests. The Minnesota annual cuts have ranged from a low of 186,000 cords in 1950 to a high of 345,000 cords in 1957 (fig. 4). Average annual production during the last 20 years has been approximately 250,000 cords. About half of the spruce production is shipped out-of-state, primarily to Wisconsin. Exports to Canada have risen in the last 6 years, but shipments to Michigan have been negligible. Minnesota counties in which intensive spruce cutting occurs include Koochiching, St. Louis, and Cook.

During the last 20 years, over two-thirds of the Michigan spruce pulpwood harvest has been exported to Wisconsin mills (fig. 5). In 1965 the Michigan spruce harvest reached a 20-year low of 66,000 cords, about half the production reported 2 decades earlier. More than 95 percent of the spruce pulpwood production comes from Upper Michigan; major producing counties are Marquette, Menominee, Keweenaw, and Delta.

Spruce comprises only 1 percent of the net timber volume in Wisconsin, so it is not surprising that the harvest has never exceeded the 39,000 cords cut in 1952. It has fallen fairly steadily since then to about 15,000 cords in 1965. The 5-year averages and range of production between 1946 and 1965 are shown below.

	Average *Thousand*	*Range* *cords*
1946-50	32	31-34
1951-55	29	23-39
1956-60	23	18-28
1961-65	18	15-23

All of the spruce is retained in the State.

Spruce is a very important pulping species in Wisconsin where several mills manufacture large

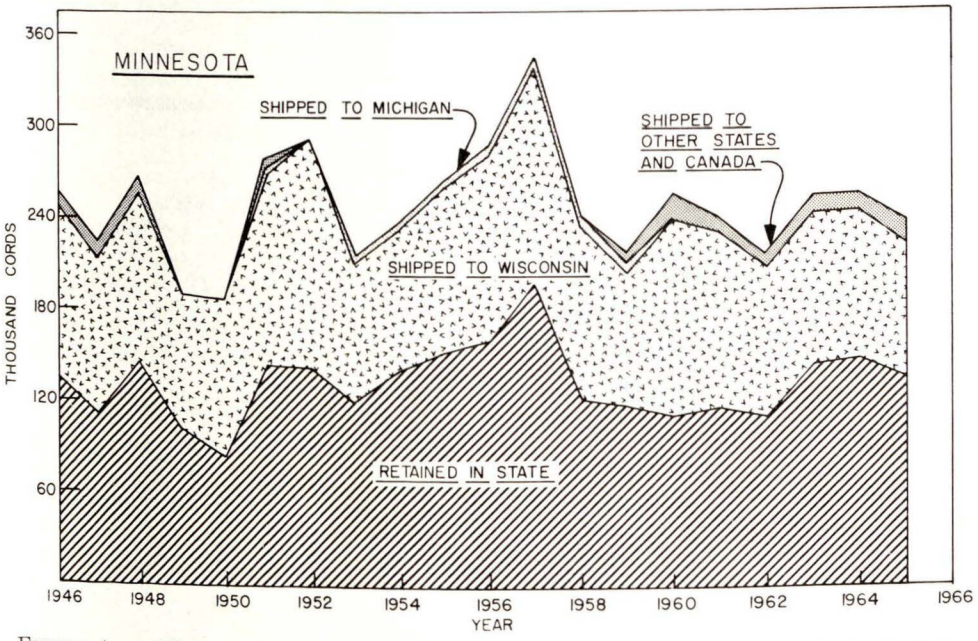


FIGURE 4. — The trend in spruce pulpwood production in Minnesota and its destination by State, 1946-65.

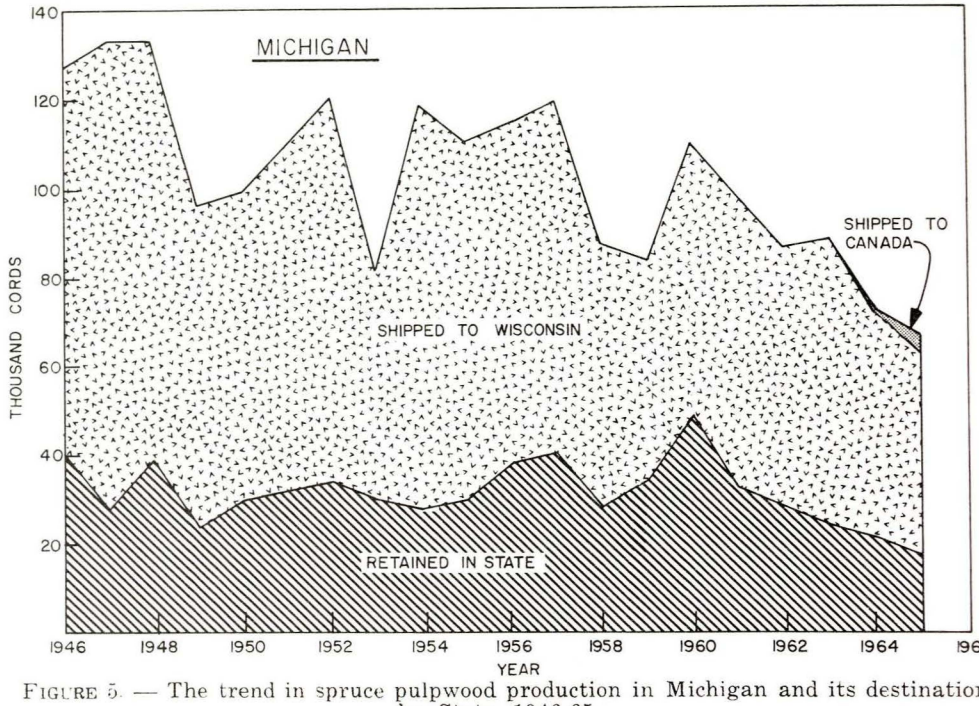


FIGURE 5. — The trend in spruce pulpwood production in Michigan and its destination by State, 1946-65.

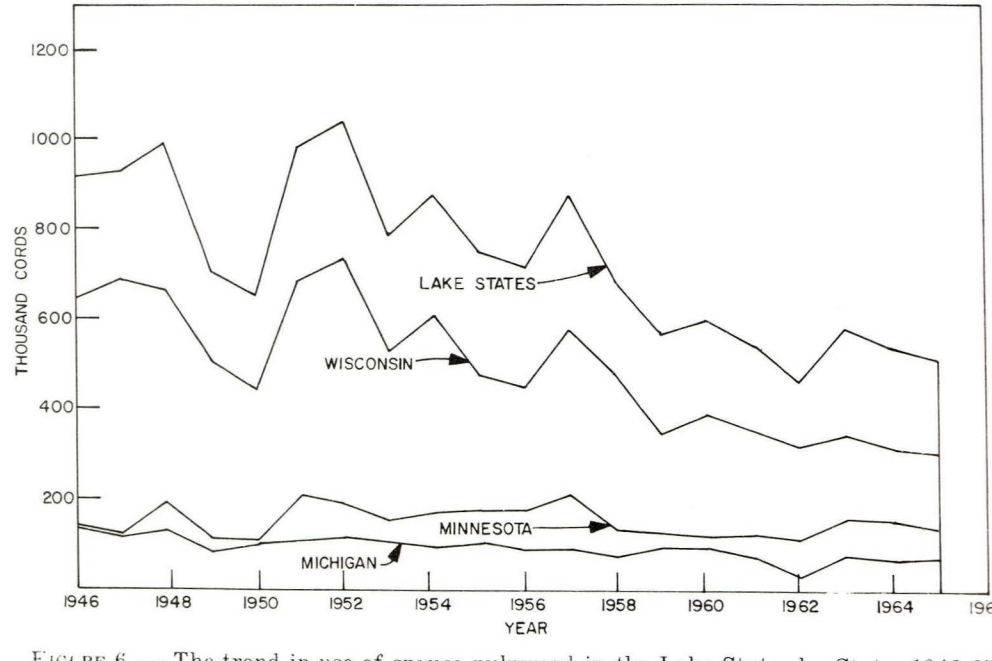


FIGURE 6. — The trend in use of spruce pulpwood in the Lake States by State, 1946-65.

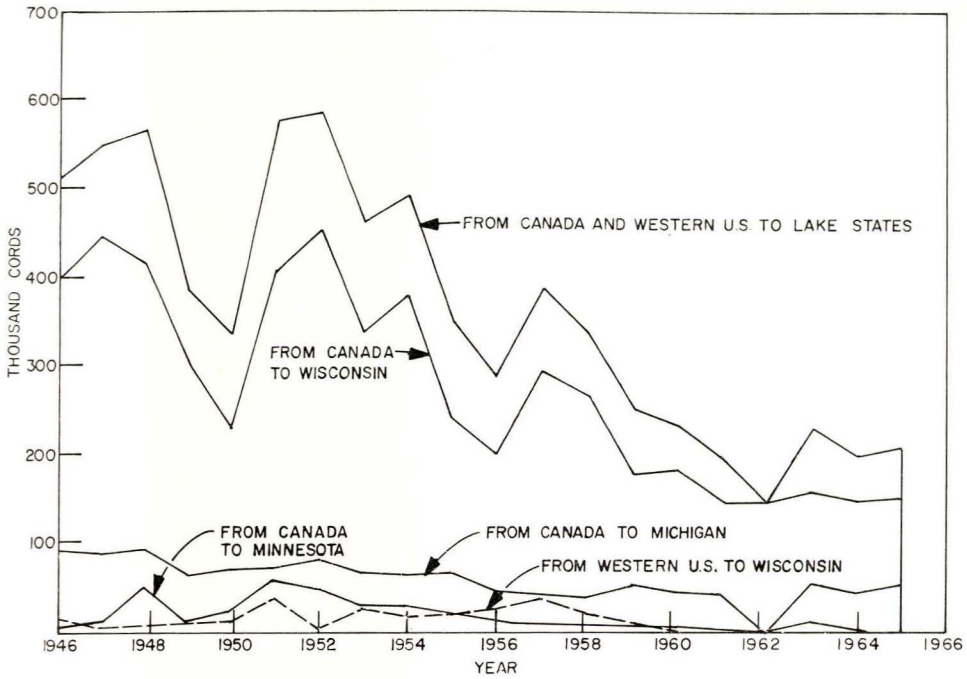


FIGURE 7. — The trend in use of imported spruce pulpwood from western U. S. and Canada, 1946-65. (In 1965, 2,000 cords of spruce pulpwood from western U. S. was used in Minnesota, but is not shown on this chart.)

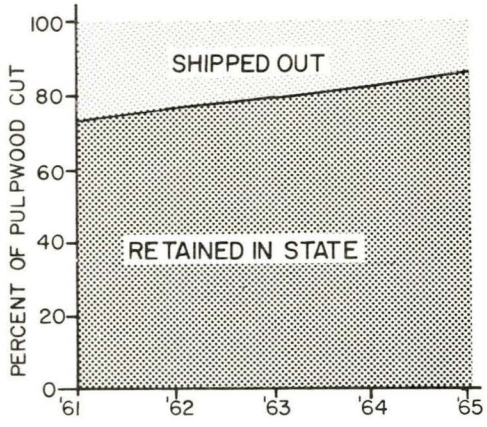
tonnages of high-quality papers. Figure 6 shows that Wisconsin consumes more spruce pulpwood than Minnesota and Michigan combined. However, annual consumption in Wisconsin now is approximately half of the consumption 20 years ago. Technological advances in pulp and paper manufacturing have allowed higher proportions of short-fibered hardwoods to be mixed with spruce. Since these species cost less than spruce per ton of paper produced, paper manufacturers have continued to seek methods of substituting hardwoods for spruce.

The trend in spruce consumption in Michigan is less sharply downward than in Wisconsin. Since 1955 Michigan has never used more than 100,000 cords annually. Again, short-fibered hardwoods have partially replaced spruce.

In Minnesota, annual spruce consumption during the past 20 years has never fallen below 108,000 cords (1946) and twice has exceeded 200,000 cords (1951 and 1957). Recently it has stabilized at approximately 150,000 cords.

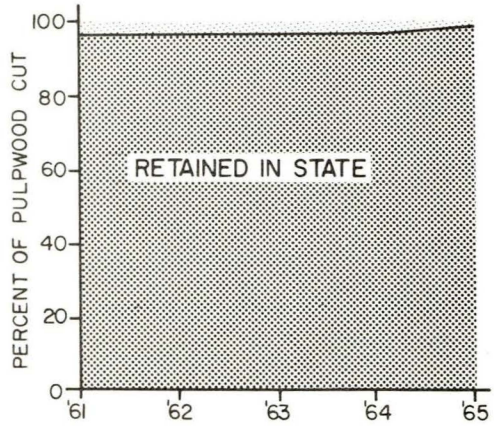
Since Lake States pulpmills use less spruce now than 5 or 10 years ago, the Lake States are more self-sufficient in supplying their spruce needs than in the past. Canada supplies the Lake States with only two-fifths of the spruce volume that it furnished 2 decades ago (fig. 7). About three-fourths of the volume imported goes to Wisconsin from Canada. The remainder goes primarily to Michigan. Until 1960, Wisconsin obtained several thousand cords of spruce annually from a few Western States; since then less than 1,000 cords per year have come from this source. Overall, the Lake States imported about 37 percent of their spruce pulpwood requirements during the last 5 years compared with 56 percent imported from 1946 to 1950.

LAKE STATES PULPWOOD PRODUCTION BY STATE OF ORIGIN AND DESTINATION, 1961-1965



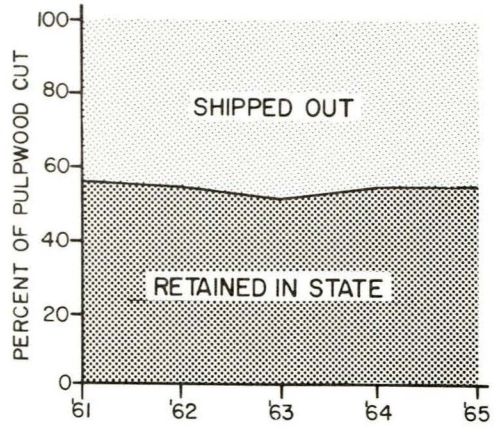
MINNESOTA

Year	Total cut	Destination of pulpwood			
		Minn.	Wis.	Mich.	Other
	(Thousand standard cords)				
1961	968	712	240	-	16
1962	979	753	216	1	9
1963	1,063	828	221	-	14
1964	1,062	856	193	-	13
1965	1,018	842	159	-	17
5-year average	1,018	798	206	-	14



WISCONSIN

Total	Total cut	Destination of pulpwood			
		Minn.	Wis.	Mich.	Other
	(Thousand standard cords)				
1961	1,078	14	1,050	1	13
1962	1,140	15	1,114	1	10
1963	1,302	20	1,262	2	18
1964	1,244	19	1,207	2	16
1965	1,253	8	1,225	1	19
5-year average	1,203	15	1,172	1	15



MICHIGAN

Total	Total cut	Destination of pulpwood			
		Minn.	Wis.	Mich.	Other
	(Thousand standard cords)				
1961	1,106	-	464	628	14
1962	1,223	-	540	677	6
1963	1,297	-	633	664	-
1964	1,321	-	588	730	3
1965	1,365	-	608	750	7
5-year average	1,262	-	566	690	6

LAKE STATES PULPWOOD PRODUCTION BY FOREST SURVEY DISTRICT AND DESTINATION BY STATES, 1965

MINNESOTA

District	Total cut	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
	(Thousand standard cords, roughwood basis)				
Northeastern	416	263	119	-	*
Central Pine	335	331	36	-	2
Rainy River	238	221	2	-	15
Hardwood & Prairie	29	27	2	-	-
Total	1,018	842	159	-	17

WISCONSIN

District	Total cut	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
	(Thousand standard cords, roughwood basis)				
Northeastern	583	-	578	1	4
Northwestern	430	2	428	-	*
Central	205	-	203	-	2
Southeastern & Southwestern	35	6	16	-	13
Total	1,253	8	1,225	1	19

MICHIGAN

District	Total cut	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
	(Thousand standard cords, roughwood basis)				
E. ½ Up. Pen.	306	-	229	75	2
W. ½ Up. Pen.	466	-	379	84	3
N. ½ Low. Pen.	555	-	-	555	-
S. ½ Low. Pen.	38	-	-	36	2
Total	1,365	-	608	750	7

* Less than 500 cords.

LAKE STATES PULPWOOD PRODUCTION BY SPECIES, STATE, AND FOREST SURVEY DISTRICT, 1961-1965

State and district	ASPEN Annual production					BALSAM FIR Annual production				
	1961	1962	1963	1964	1965	1961	1962	1963	1964	1965
	(Thousand standard cords, roughwood basis)									
MINNESOTA:						MINNESOTA:				
Northeastern	152	170	181	176	177	47	38	31	26	22
Central Pine	137	146	150	172	186	35	40	38	32	23
Rainy River	74	83	94	91	96	29	32	33	31	28
Prairie & Hardwood	6	7	8	12	9	*	-	*	*	*
Total	369	406	433	451	468	111	110	102	89	73
WISCONSIN:						WISCONSIN:				
Northeastern	280	301	321	332	341	30	24	33	27	25
Northwestern	203	210	219	208	220	30	22	27	29	24
Central	46	54	71	61	45	1	*	1	1	1
Southeastern & Southwestern	1	7	2	2	2	*	*	*	*	-
Total	530	572	613	603	608	61	46	61	57	50
MICHIGAN:						MICHIGAN:				
E. ½ Up. Pen.	91	96	122	112	142	58	56	63	47	41
W. ½ Up. Pen.	168	174	203	206	207	48	44	50	33	30
N. ½ Low.Pen.	280	305	314	332	341	9	4	8	4	2
S. ½ Low.Pen.	19	26	23	25	14	-	-	-	-	-
Total	558	601	662	675	704	115	104	121	84	73
Lake States	1,457	1,579	1,708	1,729	1,780	287	260	284	230	195

* Less than 500 cords.

(Cont'd on next page)

(Pulpwood production cont'd)

State and district	JACK PINE 1/ Annual production					SPRUCE Annual production				
	1961	1962	1963	1964	1965	1961	1962	1963	1964	1965
	(Thousand standard cords, roughwood basis)									
MINNESOTA:						MINNESOTA:				
Northeastern	127	126	136	129	101	Northeastern	131	114	125	118	106
Central Pine	56	53	50	49	56	Central Pine	35	40	39	50	38
Rainy River	13	13	14	17	12	Rainy River	70	63	90	88	92
Prairie & Hardwood	9	9	8	9	12	Prairie & Hardwood	4	*	1	1	2
Total	205	201	208	204	181	Total	240	217	255	257	238
WISCONSIN:						WISCONSIN:					
Northeastern	42	42	45	48	57	Northeastern	13	8	14	13	10
Northwestern	35	71	53	51	76	Northwestern	10	6	5	6	5
Central	73	70	69	68	72	Central	*	1	*	*	*
Southeastern & Southwestern	4	5	3	1	1	Southeastern & Southwestern	-	*	*	*	-
Total	154	188	170	168	206	Total	23	15	19	19	15
MICHIGAN:						MICHIGAN:					
E. ½ Up. Pen.	38	61	54	51	66	E. ½ Up. Pen.	45	41	37	33	28
W. ½ Up. Pen.	13	29	36	40	47	W. ½ Up. Pen.	44	41	46	35	36
N. ½ Low.Pen.	103	93	84	106	110	N. ½ Low.Pen.	7	4	5	3	1
S. ½ Low.Pen.	2	1	*	1	1	S. ½ Low.Pen.	-	-	-	-	-
Total	156	184	174	198	224	Total	96	86	88	71	65
Lake States	515	573	552	570	611	Lake States	359	318	362	347	318

1/ Includes small quantity of red and white pine.

* Less than 500 cords.

(Cont'd on next page)

(Pulpwood production cont'd)

BIRCH

State and district	Annual production				
	1961	1962	1963	1964	1965
	(Thousand standard cords, roughwood basis)				
MINNESOTA:					
Northeastern	*	*	*	-	-
Central Pine	1	2	*	*	*
Rainy River	-	-	*	-	-
Prairie & Hardwood	-	-	*	-	-
Total	1	2	*	*	*
WISCONSIN:					
Northeastern	12	4	8	8	5
Northwestern	21	31	36	28	17
Central	1	6	6	5	2
Southeastern & Southwestern	*	-	*	*	*
Total	34	41	50	41	24
MICHIGAN:					
E. ½ Up. Pen.	6	5	11	14	5
W. ½ Up. Pen.	5	3	4	6	1
N. ½ Low.Pen.	5	13	8	18	26
S. ½ Low.Pen.	-	-	-	-	-
Total	16	21	23	38	32
Lake States	51	64	73	79	56

HEMLOCK

State and district	Annual production				
	1961	1962	1963	1964	1965
	(Thousand standard cords, roughwood basis)				
MINNESOTA:					
Northeastern	-	-	-	-	-
Central Pine	-	-	-	-	-
Rainy River	-	-	-	-	-
Prairie & Hardwood	-	-	-	-	-
Total	-	-	-	-	-
WISCONSIN:					
Northeastern	18	21	25	27	37
Northwestern	25	18	24	22	21
Central	4	3	3	3	2
Southeastern & Southwestern	*	*	*	-	-
Total	47	42	52	52	60
MICHIGAN:					
E. ½ Up. Pen.	2	3	6	10	9
W. ½ Up. Pen.	42	54	56	49	55
N. ½ Low.Pen.	-	-	-	-	-
S. ½ Low.Pen.	-	-	*	-	-
Total	44	57	62	59	64
Lake States	91	99	114	111	124

* Less than 500 cords.

(Cont'd on next page)

(Pulpwood production cont'd)

TAMARACK

State and district	Annual production				
	1961	1962	1963	1964	1965
	(Thousand standard cords, roughwood basis)				
MINNESOTA:					
Northeastern	3	6	9	7	5
Central Pine	5	3	4	5	6
Rainy River	*	-	-	-	-
Prairie & Hardwood	*	-	*	*	1
Total	8	9	13	12	12
WISCONSIN:					
Northeastern	2	2	1	1	1
Northwestern	5	4	5	3	3
Central	*	*	*	*	-
Southeastern & Southwestern	-	*	*	-	*
Total	7	6	6	4	4
MICHIGAN:					
E. ½ Up. Pen.	2	3	1	2	2
W. ½ Up. Pen.	2	1	2	1	1
N. ½ Low.Pen.	-	-	-	-	*
S. ½ Low.Pen.	-	-	-	-	-
Total	4	4	3	3	3
Lake States	19	19	22	19	19

MISC. HARDWOODS

State and district	Annual production				
	1961	1962	1963	1964	1965
	(Thousand standard cords, roughwood basis)				
MINNESOTA:					
Northeastern	1	4	4	3	4
Central Pine	21	21	35	29	24
Rainy River	9	9	9	9	10
Prairie & Hardwood	3	*	3	3	3
Total	34	34	51	44	41
WISCONSIN:					
Northeastern	52	46	50	44	56
Northwestern	67	67	100	93	56
Central	74	69	74	75	77
Southeastern & Southwestern	8	6	9	12	9
Total	201	188	233	224	198
MICHIGAN:					
E. ½ Up. Pen.	2	13	2	7	8
W. ½ Up. Pen.	37	58	54	60	63
N. ½ Low.Pen.	46	67	70	76	75
S. ½ Low.Pen.	11	6	5	3	3
Total	96	144	131	146	149
Lake States	331	366	415	414	388

* Less than 500 cords.

(Cont'd on next page)

(Pulpwood production cont'd)

State and district	RESIDUE & CHIPS 1/ Annual production					ALL SPECIES 2/ Annual production				
	1961	1962	1963	1964	1965	1961	1962	1963	1964	1965
	(Thousand standard cords, roughwood basis)									
MINNESOTA:						MINNESOTA:				
Northeastern	-	-	-	-	1	Northeastern	461	458	486	459	416
Central Pine	-	-	-	2	2	Central Pine	290	305	316	339	335
Rainy River	-	-	-	-	-	Rainy River	195	200	240	236	238
Prairie & Hardwood	-	*	1	3	2	Prairie & Hardwood	22	16	21	28	29
Total	-	*	1	5	5	Total	968	979	1,063	1,062	1,018
WISCONSIN:						WISCONSIN:					
Northeastern	9	18	55	43	51	Northeastern	458	466	552	543	583
Northwestern	7	14	19	15	8	Northwestern	403	443	488	455	430
Central	4	8	19	12	6	Central	203	211	243	225	205
Southeastern & Southwestern	1	2	5	6	23	Southeastern & Southwestern	14	20	19	21	35
Total	21	42	98	76	88	Total	1,078	1,140	1,302	1,244	1,253
MICHIGAN:						MICHIGAN:					
E. ½ Up. Pen.	-	*	8	6	5	E. ½ Up. Pen.	249	278	304	282	306
W. ½ Up. Pen.	21	22	25	38	26	W. ½ Up. Pen.	375	426	476	468	466
N. ½ Low.Pen.	-	-	-	-	-	N. ½ Low.Pen.	450	486	489	539	555
S. ½ Low.Pen.	-	-	-	3	20	S. ½ Low.Pen.	32	33	28	32	38
Total	21	22	33	47	51	Total	1,106	1,223	1,297	1,321	1,365
Lake States	42	64	132	128	144	Lake States	3,152	3,342	3,662	3,627	3,636

1/ Not reported by district. Prorated on basis of most recent lumber output figures.

2/ Including residues and chips.

* Less than 500 cords.

LAKE STATES PULPWOOD PRODUCTION BY COUNTY AND SPECIES, 1965

MINNESOTA

District 1/ and county	All species	Aspen	Balsam	Birch	Pine	Spruce	Tamarack	Misc. hdwds.	Residue & chips 2/
	(Thousand standard cords, roughwood basis)								
NORTHEASTERN:									
Carlton	27	23	2	-	2	*	*	-	
Cook	43	-	*	-	-	43	-	-	
Lake	60	6	1	-	34	19	-	-	
Pine	8	6	*	-	*	*	*	2	
St. Louis	277	142	19	-	65	44	5	2	
Total	416	177	22	-	101	106	5	4	1
CENTRAL PINE:									
Aitkin	31	22	2	-	3	3	1	*	
Becker	8	8	*	-	*	*	-	-	
Beltrami	74	36	7	*	14	13	1	3	
Cass	52	30	3	*	9	2	2	6	
Clearwater	49	29	*	*	4	2	*	14	
Crow Wing	6	1	*	-	5	*	*	-	
Hubbard	30	21	*	-	7	1	1	-	
Itasca	80	38	11	-	12	17	1	1	
Wadena	3	1	-	-	2	-	-	-	
Total	335	186	23	*	56	38	6	24	2
RAINY RIVER:									
Koochiching	205	92	27	-	9	67	-	10	
Lake of the Woods	33	4	1	-	3	25	-	-	
Total	238	96	28	-	12	92	-	10	-
HARDWOOD:									
Mille Lacs	2	-	-	-	-	-	-	2	
Morrison	*	*	*	-	*	*	-	-	
Otter Tail	*	*	-	-	-	*	-	-	
Todd	2	*	-	-	2	-	-	-	
Total	6	*	*	-	2	*	-	2	2
PRAIRIE:									
Clay	*	*	-	-	-	-	-	-	-
Mahnomen	6	5	-	-	*	-	-	1	
Polk	3	1	*	-	*	1	1	-	
Roseau	14	3	*	-	10	1	-	-	
Total	23	9	*	-	10	2	1	1	-
State total	1,018	468	73	*	181	238	12	41	5

1/ Includes only those counties that supplied pulpwood in 1965.

2/ County figures are not available.

* Less than 500 cords.

WISCONSIN

District & county[1]	All species	Aspen	Balsam	Birch	Hemlock	Pine	Spruce	Tamarack	Misc. hdwds.	Residue & chips[2]
	(Thousand standard cords, roughwood basis)									
NORTHEASTERN:										
Florence	33	26	1	-	3	*	1	-	2	
Forest	72	50	6	-	8	3	1	*	4	
Langlade	46	30	2	*	1	3	*	*	10	
Lincoln	77	46	3	1	2	8	1	*	16	
Marinette	69	45	4	-	5	10	2	*	3	
Oconto	37	29	1	-	2	2	*	-	3	
Oneida	120	75	6	2	2	19	4	1	11	
Shawano[3]	39	20	1	*	11	3	*	-	4	
Vilas	39	20	1	2	3	9	1	*	3	
Total	583	341	25	5	37	57	10	1	56	51
NORTHWESTERN:										
Ashland	57	38	8	1	3	1	1	1	4	
Bayfield	46	25	2	3	2	13	-	-	1	
Burnett	18	3	-	*	*	15	*	*	*	
Douglas	51	27	*	*	-	22	1	*	1	
Iron	24	14	4	1	2	1	1	-	1	
Price	88	52	5	8	3	1	1	1	17	
Rusk	28	15	*	*	1	-	*	*	12	
Sawyer	38	20	2	3	4	1	*	1	7	
Taylor	41	19	2	1	6	*	*	*	13	
Washburn	31	7	1	-	*	22	1	*	*	
Total	430	220	24	17	21	76	5	3	56	8
CENTRAL:										
Adams	33	1	-	-	-	19	-	-	13	
Chippewa	10	9	-	-	*	1	-	-	-	
Clark	17	6	*	*	*	1	*	-	10	
Eau Claire	4	1	-	-	*	3	-	-	-	
Jackson	22	1	-	-	-	18	-	-	3	
Juneau	18	1	-	-	-	12	-	-	5	
Marathon	48	20	1	2	2	2	*	-	21	
Marquette	3	-	-	-	-	*	-	-	3	
Monroe	7	*	-	-	-	6	-	-	1	
Portage	14	1	*	*	*	4	*	-	9	
Waupaca	3	3	*	*	*	*	*	-	*	
Waushara	4	*	-	-	-	2	-	-	2	
Wood	16	2	-	-	*	4	-	-	10	
Total	205	45	1	2	2	72	*	-	77	6

District1/ & county	All species	Aspen	Balsam	Birch	Hem-lock	Pine	Spruce	Tam-arack	Misc. hdwds.	Residue2/ & chips
	(Thousand standard cords, roughwood basis)									
SOUTHWESTERN:										
Barron	1	1	-	-	-	-	-	-	-	
Buffalo	*	-	-	*	-	-	-	-	-	
Crawford	1	-	-	-	-	-	-	-	1	
Dunn	*	*	-	-	-	*	-	-	-	
Grant	4	-	-	-	-	-	-	-	4	
Iowa	3	-	-	-	-	-	-	-	3	
Polk	1	*	-	-	-	1	-	*	-	
Sauk	*	-	-	-	-	*	-	-	-	
Trempealeau	*	-	-	-	-	*	-	-	-	
Total	29	1	-	*	-	1	-	*	8	19
SOUTHEASTERN:										
Brown	*	*	-	-	-	*	-	-	-	
Columbia	1	*	-	-	-	*	-	-	1	
Door	*	*	-	-	-	-	-	-	-	
Fond du Lac	*	-	-	-	-	*	-	-	-	
Kewaunee	*	*	-	-	-	-	-	-	-	
Outagamie	1	1	-	-	-	-	-	*	*	
Washington	*	-	-	-	-	*	-	-	-	
Total	6	1	-	-	-	*	-	*	1	4
State total	1,253	608	50	24	60	206	15	4	198	88

1/ Includes only those counties that supplied pulpwood in 1965.

2/ County figures are not available.

3/ Includes Menominee County.

* Less than 500 cords.

MICHIGAN

District 1/ & county	All species	Aspen	Balsam	Birch	Hem-lock	Pine	Spruce	Tam-arack	Misc. hdwds.	Residue 2/ & chips
	(Thousand standard cords, roughwood basis)									
E. ½ UP. PEN.:										
Alger	11	2	1	*	*	7	1	-	*	
Chippewa	30	3	2	*	1	18	5	1	-	
Delta	82	42	15	*	2	10	7	*	6	
Luce	34	8	2	3	4	14	3	*	*	
Mackinac	15	4	6	1	-	2	2	-	*	
Menominee	91	71	9	*	1	1	6	1	2	
Schoolcraft	38	12	6	1	1	14	4	*	*	
Total	306	142	41	5	9	66	28	2	8	5
W. ½ UP. PEN.										
Baraga	63	30	4	-	5	3	7	-	14	
Dickinson	62	48	4	*	1	4	3	1	1	
Gogebic	54	21	2	*	19	*	1	*	11	
Houghton	58	15	3	*	17	5	4	-	14	
Iron	79	48	7	1	6	2	7	*	8	
Keweenaw	9	-	3	-	-	-	6	-	-	
Marquette	71	25	6	*	1	32	7	-	*	
Ontonagon	44	20	1	*	6	1	1	*	15	
Total	466	207	30	1	55	47	36	1	63	26
N. ½ LOW.PEN.										
Alcona	52	40	*	4	-	1	1	-	6	
Alpena	18	13	1	2	-	*	*	-	2	
Antrim	*	*	-	*	-	-	-	-	-	
Arenac	1	1	-	*	-	-	-	-	*	
Benzie	5	3	-	1	-	*	*	*	1	
Cheboygan	10	8	*	1	-	1	*	*	*	
Clare	18	15	-	1	-	1	-	-	1	
Crawford	32	8	-	1	-	21	-	-	2	
Emmett	*	*	-	-	-	*	-	-	-	
Gladwin	3	3	-	*	-	-	-	-	*	
Grand Traverse	14	9	-	1	-	2	-	-	2	
Iosco	17	5	*	*	-	12	*	-	*	
Isabella	16	15	-	-	-	-	-	-	1	
Kalkaska	9	6	-	*	-	3	-	-	*	
Lake	40	14	-	1	-	12	-	-	13	
Leelanau	*	*	-	-	-	*	-	-	*	
Manistee	34	12	-	1	-	2	-	-	19	
Mason	14	7	-	*	-	1	-	-	6	
Mecosta	17	16	-	*	-	*	-	-	1	
Midland	1	1	-	*	-	-	-	-	-	
Missaukee	21	14	-	1	-	4	-	-	2	
Montmorency	42	29	*	3	-	5	-	-	5	
Newaygo	34	26	-	*	-	3	-	-	5	
Oceana	7	6	-	*	-	*	-	-	1	
Ogemaw	16	7	-	1	-	8	-	-	*	
Osceola	18	14	-	*	-	*	-	-	4	
Oscoda	47	21	-	2	-	24	-	-	*	
Otsego	2	2	-	*	-	*	-	-	*	
Presque Isle	19	13	1	2	-	2	*	-	1	
Roscommon	28	18	-	3	-	6	-	-	1	
Wexford	20	15	-	1	-	2	-	-	2	
Total	555	341	2	26	-	110	1	*	75	-

MICHIGAN (cont'd)

District 1/ & county	All species	Aspen	Balsam	Birch	Hem-lock	Pine	Spruce	Tam-arack	Misc. hdwds.	Residue & chips 2/
	(Thousand standard cords, roughwood basis)									
S. ½ LOW.PEN.										
Allegan	1	*	-	-	-	-	-	-	1	
Barry	*	-	-	-	-	-	-	-	*	
Berrien	1	*	-	-	-	-	-	-	1	
Genessee	*	*	-	-	-	-	-	-	-	
Gratiot	*	*	-	-	-	-	-	-	*	
Ionia	*	*	-	-	-	-	-	-	-	
Kalamazoo	*	-	-	-	-	-	-	-	*	
Kent	1	1	-	-	-	*	-	-	*	
Lapeer	*	*	-	-	-	-	-	-	-	
Montcalm	9	8	-	-	-	*	-	-	1	
Muskegon	1	1	-	-	-	*	-	-	*	
Ottawa	1	*	-	-	-	1	-	-	*	
St. Claire	*	*	-	-	-	-	-	-	-	
Sanilac	*	*	-	-	-	-	-	-	-	
Tuscola	4	4	-	-	-	-	-	-	-	
Van Buren	*	*	-	-	-	-	-	-	*	
Total	38	14	-	-	-	1	-	-	3	20
State total	1,365	704	73	32	64	224	65	3	149	51

1/ Includes only those counties that supplied pulpwood in 1965.

2/ County figures are not available.

* Less than 500 cords.

PART II. IN THE CENTRAL STATES

1965 PULPWOOD BRIEFS

Both production and consumption of pulpwood declined in the Central States in 1965. Production and use of residues rose but roundwood production and use declined sharply, partly because of a woods labor shortage. The region was a net importer of pulpwood. Regional roundwood production and consumption were nearly equal.

Roundwood Harvest Declines 16 Percent

In 1965, the pulpwood cut in the Central States was 204,200 cords, 41,600 cords less than in 1964 and the smallest cut since 1960. The harvest declined in all four States as shown in the 5-year summary below.

	In thousand cords				
State	*1961*	*1962*	*1963*	*1964*	*1965*
Illinois	98	120	102	105	77
Indiana	73	87	79	85	82
Iowa	22	28	20	33	25
Missouri	15	21	21	23	20
Total	208	256	222	246	204

More than half of the total decline occurred in Illinois where less than two-thirds of the record harvest of 1962 was attained; insufficient woods labor was a major reason. The smallest decline, less than 4 percent, was in Indiana. Missouri cut less pulpwood than the others; yet the potential of Missouri's forests for pulpwood output is large if closer markets become available. Overall, the harvest of poletimber-size trees in Missouri could be quadrupled without exceeding desirable cutting levels.

Soft hardwoods comprised almost two-thirds of the regional pulpwood cut in 1965, hard hardwoods about one-third, and softwoods only two percent. Compared to 1964, the cut of all three species groups declined — hard hardwoods by 18,400 cords, soft hardwoods by 17,800 cords, and softwoods by 5,400 cords. The largest percentage drop, 56 percent, was in softwoods.

Illinois and Indiana were the leading producers of soft hardwood pulpwood in the Central States in 1965, with 56,500 cords and 46,500 cords, respectively. Only 4,300 cords of soft hardwoods harvested in Indiana were shipped out of the region. Indiana had the only yearly increase in soft hardwood production — about 1,400 cords. The largest decrease was 14,100 cords in Illinois.

As for hard hardwoods, Indiana was the leading pulpwood producer followed by Illinois, Iowa, and Missouri. Only 1,000 cords left the Central States. Each State had less hard hardwood production than the previous year, and major declines of nearly one-third occurred in Illinois and Iowa.

More than half of the regional softwood cut for pulping was shipped to other areas. Although production in Illinois decreased 5,600 cords (63 percent), it still comprised more than three-fourths of the volume cut in the four States. The remaining softwood cut was in Indiana and Missouri.

At the county level, only Will County in Illinois produced over 10,000 cords of pulpwood in 1965 (fig. 8). Other high-producing counties were Sullivan, Ripley, and Gibson in Indiana. Cutting occurred in 129 counties — 55 in Illinois, 42 in Indiana, 17 in Iowa, and 15 in Missouri. As might be expected, most of the cutting was in counties close to pulpmills. Most of the mills satisfied their pulpwood requirements within 50 miles of the mill.

Residue Consumption Increases 400 Percent Since 1961

Consumption of 46,000 cords of residue by 11 of the 15 Central States mills in 1965 eclipsed the previous record of 39,000 cords in 1964 (table 3). A slight drop in the residues used in Illinois was more than offset by increases in the rest of the region. Local forest industries supplied 54 percent of the wood residues; the remainder came from eight other States.

One-fourth of the residue used was softwood, and more than 90 percent of the softwood residue came from States outside the region. These states, in order of volume, were Texas, Wisconsin, Michigan, Mississippi, and Louisiana. About 37 percent of these imports were chips; the rest was wood flour, sawdust, and veneer cores.

Of the 34,600 cords of hardwood residue used by Central States pulpmills, three-fifths was chips and the remainder was primarily slabs from sawmills. Thirty-one percent came from Wisconsin, Louisiana, Kentucky, Mississippi, and Pennsylvania; the remainder came from forest industries within the region. Only 2,100 cords of hardwood residue was shipped from the Central States.

Residues now account for more than one-sixth of the pulpwood used in the Central States. The expanding substitution of residues for roundwood is likely to continue as more sawmills add debarkers and chippers.

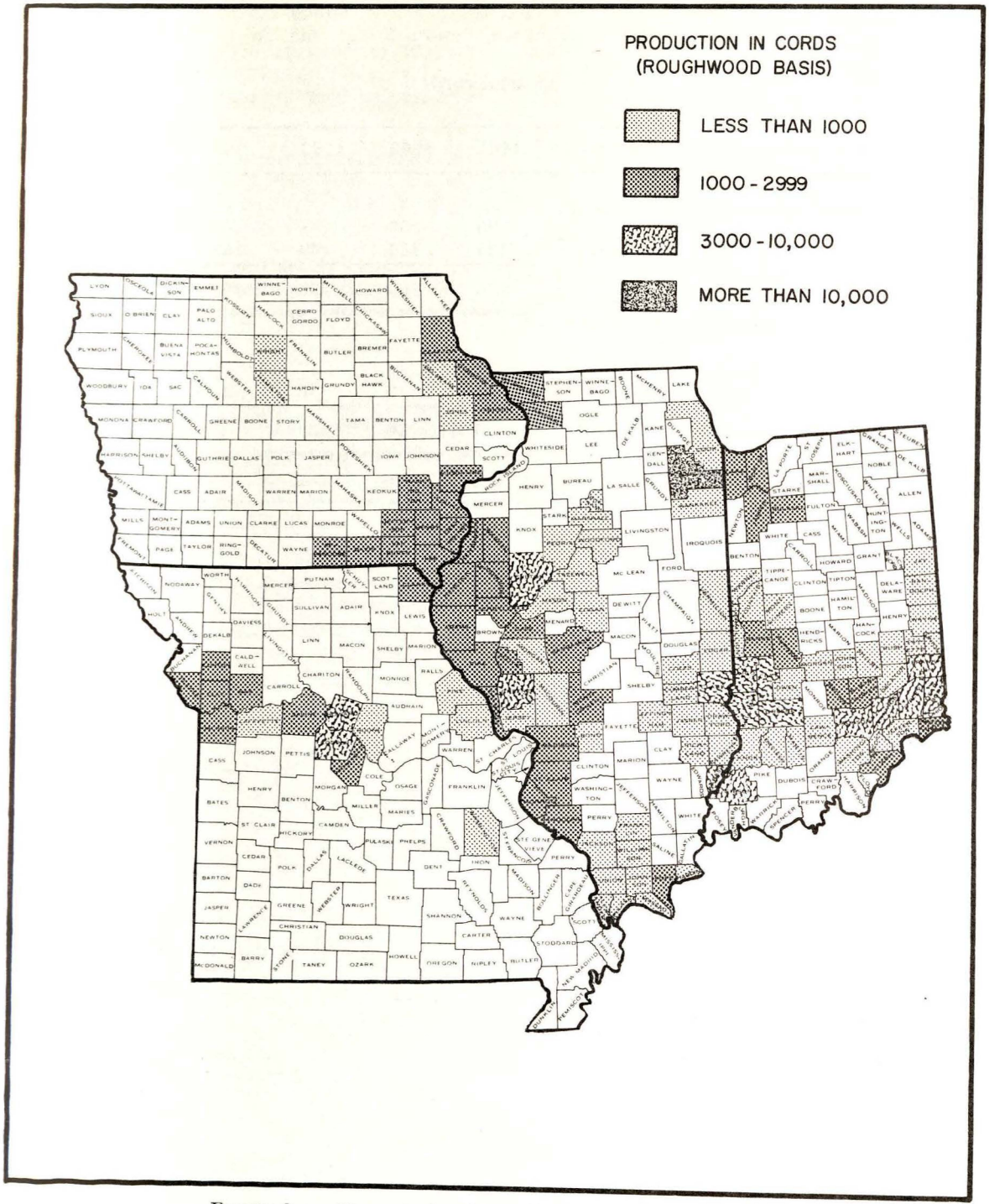


FIGURE 8. — Harvest of pulpwood bolts by counties, 1965.

TABLE 3. — *Trends in consumption of roundwood and residues as pulpwood, Central States, 1961-65*

(Thousand cords)

Type of material and area	1961	1962	1963	1964	1965
Roundwood					
Illinois	95	106	91	82	68
Indiana, Iowa, Missouri	130	160	142	163	143
Total	225	266	233	245	211
Residue					
Illinois	8	13	17	25	22
Indiana, Iowa, Missouri	1	7	12	14	24
Total	9	20	29	39	46
All material	234	286	262	284	257

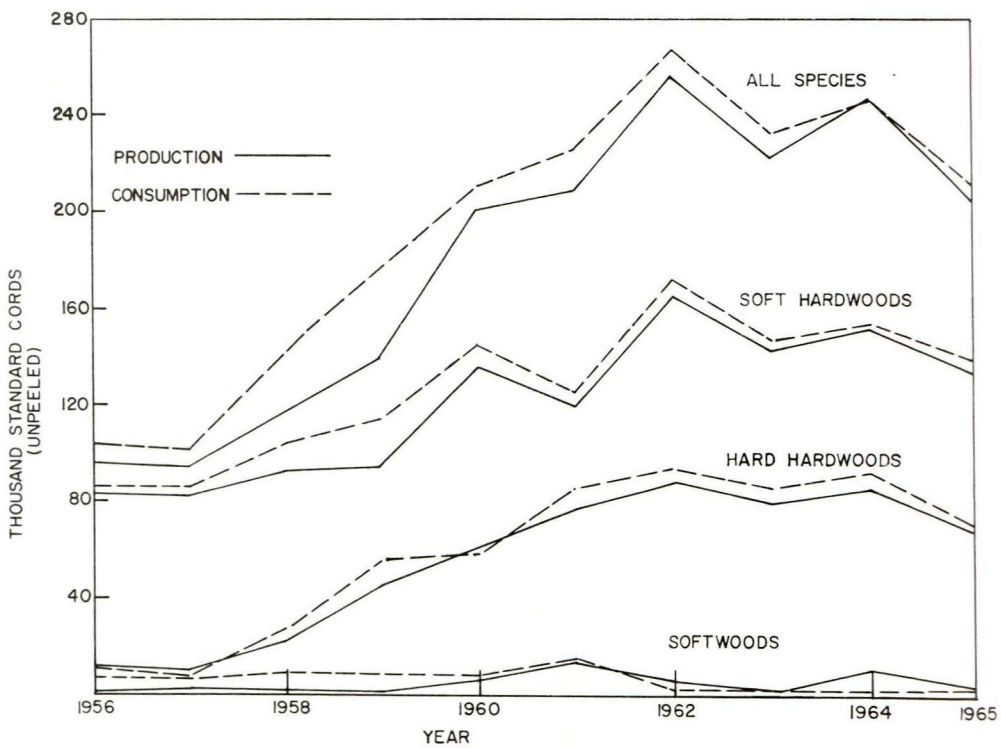


FIGURE 9. — Round pulpwood production and consumption in the Central States, 1956-65.

Roundwood Consumption Down

Roundwood consumption dropped to 211,600 cords in 1965, a decrease of 34,000. Ninety-six percent of the Central States roundwood harvest was used by regional mills.

Since 1962, annual consumption of roundwood in Illinois has fallen sharply each year (table 3). During the same period roundwood use in other parts of the region reveals no trend.

Soft hardwoods comprised nearly two-thirds of the bolts used, and hard hardwoods the other one-third. Less than one percent was softwood.

Illinois is a Large Importer

Illinois received 48 percent of all pulpwood imported into the Central States in 1965. Nearly one-fifth of the pulpwood consumed in Illinois came from States outside the region, and more than two-thirds of the wood imported by Illinois was in the form of residues.

Net pulpwood imports into the Central States in 1965 were 26,600 cords — 7,400 cords of roundwood and 19,200 cords of residue. Although the region had net exports of 2,600 cords of softwood bolts, net imports of softwood residues were 10,600 cords. The Lake States contributed 21,000 cords of bolts and residue to Central States pulpmills, and other States furnished 15,600 cords. Exported pulpwood went to five mills in five widely dispersed States.

Roundwood Production and Consumption Approach Equality

Figure 9 shows that since 1959 the gap between production and consumption of roundwood in the Central States has narrowed although the difference has been small for many years. In 1964, production exceeded consumption by 1,000 cords, but was slightly less than consumption in 1965.

During the last 4 years, the regional softwood harvest has equalled or exceeded consumption, a reversal of the pattern for the previous 6 years. Soft hardwood bolt imports have decreased in recent years although consumption still exceeds production. During the last 5 years, imports of soft hardwood bolts has been signficantly less than during the previous 5 years. Thus, the region is becoming more self-sufficient in supplying roundwood to resident mills, and a larger share of the value added and man-hours used in pulpwood production for these mills occurs within the region. The overall effect is a tendency to strengthen the regional economy.

CENTRAL STATES PULPWOOD PRODUCTION AND RECEIPTS BY STATE, 1965

Species group and destination	Production by States[1]					Imports			Total receipts
	Illinois	Indiana	Iowa	Missouri	Region	Lake States	Other U. S.	Total imports	
	(In standard cords, unpeeled)[2]								
Softwoods									
Illinois [3]	881	498	-	253	1,632	-	-	-	1,632
Ind., Iowa, Mo.[3]	-	-	-	-	-	-	-	-	-
Exported[4]	2,430	157	-	-	2,587	-	-	-	-
Total	3,311	655	-	253	4,219	-	-	-	1,632
Soft hardwoods									
Illinois	44,901	8,490	-	263	53,654	1,332	3,677	5,009	58,663
Ind., Iowa, Mo.	11,651	33,698	12,596	17,036	74,981	4,885	722	5,607	80,588
Exported[4]	-	4,334	-	-	4,334	-	-	-	-
Total	56,552	46,522	12,596	17,299	132,969	6,217	4,399	10,616	139,251
Hard hardwoods									
Illinois	6,501	1,484	-	-	7,985	-	-		7,985
Ind., Iowa, Mo.	10,985	32,573	12,000	2,427	57,985	4,000	726	4,726	62,711
Exported[4]	-	943	82	-	1,025	-	-	-	-
Total	17,486	35,000	12,082	2,427	66,995	4,000	726	4,726	70,696
Total roundwood									
Illinois	52,283	10,472	-	516	63,271	1,332	3,677	5,009	68,280
Ind., Iowa, Mo.	22,636	66,271	24,596	19,463	132,966	8,885	1,448	10,333	143,299
Exported[4]	2,430	5,434	82	-	7,946	5,922	802	6,724	7,502
Total	77,349	82,177	24,678	19,979	204,183	10,217	5,125	15,342	211,579
Residues, softwood									
Illinois	778	-	-	-	778	5,922	802	6,724	7,502
Ind., Iowa, Mo.	-	-	-	-	-	-	3,903	3,903	3,903
Total	778	-	-	-	778	5,922	4,705	10,627	11,405
Residues, hardwood									
Illinois	8,626	-	-	34	8,660	-	5,822	5,822	14,482
Ind., Iowa, Mo.	4,956	3,931	6,401	-	15,288	4,859	-	4,859	20,147
Exported[4]	-	-	-	2,112	2,112	-	-	-	-
Total	13,582	3,931	6,401	2,146	26,060	4,859	5,822	10,681	34,629
All wood material									
Illinois	61,687	10,472	-	550	72,709	7.254	10,301	17,555	90,264
Ind., Iowa, Mo.	27,592	70,202	30,997	19,463	148,254	13,744	5,351	19,095	167,349
Exported[4]	2,430	5,434	82	2,112	10,058	-	-	-	-
Total	91,709	86,108	31,079	22,125	231,021	20,998	15,652	36,650	257,613

1/ Vertical columns of figures under box heading "Production by States" present the amount of pulpwood cut in each State.

2/ Factors used in converting to standard green cords (128 cu. ft.) were: 4,500 pounds of soft-hardwood roundwood; 5,000 pounds of hard-hardwood or coniferous roundwood; 4,100 pounds of softwood chips (green); 4,400 pounds of hardwood chips (green); 2,500 pounds of chips (all species, dry).

3/ Combined to prevent disclosure of individual mill receipts.

4/ Pulpwood shipped to mills outside the region.

REPORTS ON PULPWOOD PRODUCTION PUBLISHED BY THE NORTH CENTRAL FOREST EXPERIMENT STATION

Reports of pulpwood production have been published by the Station since 1946. One group of short 2-page Notes gives information by State and species. Another group of longer reports begun in 1959 gives more detailed information by County. All of these publications were prepared by Arthur G. Horn.

The longer reports are:

Pulpwood Production in Lake States Counties.

1959 data: Station Paper 85, 13 pp.
1960 data: Station Paper 94, 28 pp.
1961 data: Station Paper 106, 18 pp.
1962 data: Research Paper LS-5, 16 pp.
1963 data: Resource Bulletin LS-1, 17 pp.
1964 data: Resource Bulletin LS-2, 19 pp.

The 2-page Notes are:

Aspen Takes Lead as Pulping Species in Lake States (1946 data). Tech. Note 288.
Lake States Pulpwood Production Declines in 1947. Tech. Note 301.
Near Record Cut of Pulpwood in Lake States — 1948. Tech. Note 320.
Pulpwood Harvest Declines to Prewar Level in Lake States — 1949. Tech. Note 336.
Lake States Pulpwood Production Reverses Trend, 1950. Tech. Note 364.
Ten Years' Pulpwood Production in the Lake States (1942-1951). Tech. Note 384.
1951 Lake States Pulpwood Production Reaches All-Time High. Tech. Note 398.
1952 Lake States Pulpwood Production Continues at High Level. Tech. Note 399.
Aspen Makes Up Nearly One-Half of 1953 Pulpwood Cut in Lake States. Tech. Note 418.
Production of Pulpwood Continues at High Level in the Lake States, 1954. Tech. Note 436.
Lake States Pulpwood Production Shows Increase in 1955; Canadian Imports Decrease. Tech. Note 456.
Some Highlights of Pulpwood Production in the Lake States, 1946-1955. Tech. Note 457.
Lake States Pulpwood Production Reaches New High, 1956. Tech. Note 495.
Lake States Pulpwood Production Remains High — Hardwood Cut Climbs, 1957. Tech. Note 529.
Trend of Pulpwood Harvest Up in Wisconsin, Particularly in Central Area (1957). Tech. Note 531.
Lake States Pulpwood Production and Imports Decline in 1958. Tech. Note 558.
Lake States Pulpwood Production Exceeds 3 Million Cords, 1959. Tech. Note 588.
Lake States Pulpwood Production Up 11 Percent in 1960. Tech. Note 606.
Production and Imports of Pulpwood Decline in the Lake States, 1961. Tech. Note 624.
Lake States Pulpwood Production Up While Canadian Imports Drop to All-Time Low, 1962. Res. Note LS-23.
Lake States Pulpwood Cut Continues to Climb: Wisconsin Takes Lead in Pulpwood Production (1963). Res. Note LS-48.
Lake States Pulpwood Production Levels Off, 1964. Res. Note LS-65.
Lake States Pulpwood Production Hampered by Adverse Weather and Labor Shortage, 1965. Res. Note NC-3.

THE FOREST SERVICE CREED

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